

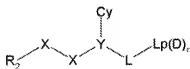
Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1 to 35 (canceled):

36 (previously presented): A process for the preparation of serine protease inhibitor compound of formula (I)



(I)

wherein:

R_2 is:-

- (i) phenyl optionally being substituted in the 3 and/or 4 position by halo, nitro, thiol, haloalkoxy, hydrazido, alkylhydrazido, amino, cyano, haloalkyl, alkylthio, alkenyl, alkynyl, acylamino, tri or difluoromethoxy, carboxy, acyloxy, MeSO_2 - or R_1 , and optionally substituted at the 6 position by amino, hydroxy, halo, alkyl, carboxy, alkoxy, carbonyl, cyano, amido (CONH_2), aminoalkyl, alkoxy or alkylthio;
- (ii) naphth-2-yl optionally substituted at the 6 or 7 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R_1 ; and optionally substituted at the 3 position by amino, hydroxy, halo, alkyl, carboxy, cyano, amido, aminoalkyl, alkoxy or alkylthio;
- (iii) isoquinolin-7-yl, indol-5-yl, indol-6-yl, indazol-5-yl, indazol-6-yl, benzothiazol-6-yl or benzisoxazol-5-yl optionally substituted at the 3 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R_1 ;
- (iv) benzimidazol-5-yl or benzothiazol-6-yl optionally substituted at the 2 position by amino;
- (v) thien-2-yl or thien-3-yl optionally substituted at the 4 or 5 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R_1 ;

(vi) 3,4-methylenedioxy phenyl, 2,3-dihydroindol-6-yl, 3,3-dichloro-2-oxo-indol-6-yl or 1-methyl-3-aminoindazol-5-yl;

(vii) benzothiazol-2-yl, imidazo[1,2-a]pyrimidin-2-yl or tetrahydro-imidazo[1,2-a]pyrimidin-2-yl;

(viii) pyrazol-2-yl optionally substituted at the 5 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R₁;

(ix) pyrid-2-yl optionally substituted at the 5 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R₁;

(x) pyrid-3-yl optionally substituted at the 6 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R₁;

(xi) benzofur-2-yl optionally substituted at the 3 position by amino, hydroxy, halo, alkyl, carboxy, cyano, amido, aminoalkyl, alkoxy or alkylthio and at the 5 or 6 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R_{1j};

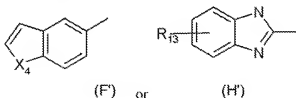
(xii) indol-2-yl optionally substituted on the indole nitrogen atom by alkyl and optionally substituted at the 5 or 6 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R_{1j};

(xiii) indol-6-yl substituted at the 5 position by amino, hydroxy, halo, alkyl, carboxy, alkoxy, carbonyl, cyano, amido, aminoalkyl, alkoxy or alkylthio and optionally substituted at the 3 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R_{1j}; or

(xiv) benzo[b]thiophen-2-yl optionally substituted at the 3 position by amino, hydroxy, halo, alkyl, carboxy, cyano, amido, aminoalkyl, alkoxy or alkylthio and at the 5 or 6 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R_{1j};

with the proviso that R₂ cannot be aminoisoquinolyl;

or R₂ is a group of formula (F') or (H')



wherein X₄ is O or S, and R₁₃ is selected from hydrogen, fluoro, chloro and methyl;

-X-X- is -CONH-;

R_1 is hydrogen, hydroxy, alkoxy, alkyl, alkylaminoalkyl, alkanoyl, hydroxyalkyl, alkoxyalkyl, alkoxycarbonyl, alkylaminocarbonyl, alkylamino, carboxyl, carboxymethyl, amido or amidomethyl;

R_{1j} is hydrogen, hydroxy, alkoxy, alkyl, alkanoyl, hydroxyalkyl, alkoxyalkyl, alkoxycarbonyl, alkylamino, carboxyl, carboxymethyl, amido or amidomethyl;

Y is a CH group;

Cy is an optionally R_{3a} substituted: phenyl group, or a phenyl group substituted by $R_{3i}X_i$;

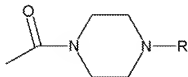
each R_{3a} independently is hydrogen, hydroxyl, alkoxy, aralkoxy, alkyl, alkylaminoalkyl, hydroxymethyl, carboxy, alkoxyalkyl, alkoxycarbonyl, alkylaminocarbonyl, aminomethyl, $CONH_2$, CH_2CONH_2 , (1-6C)alkanoylamino, alkoxycarbonylamino, amino, halo, cyano, nitro, thiol, alkylthio, alkylsulphonyl, alkylsulphenyl, triazolyl, imidazolyl, tetrazolyl, hydrazido, alkylimidazolyl, thiazolyl, alkylthiazolyl, alkylloxazolyl, oxazolyl, alkylsulphonamido, alkylaminosulphonyl, aminosulphonyl, haloalkoxy, haloalkyl, a group of the formula $-C(X^3)N(R^{11})R^{12}$ (wherein X^3 is O or S; and R^{11} and R^{12} are independently selected from hydrogen, methyl or ethyl or together with the nitrogen atom to which they are attached form a pyrrolidin-1-yl, piperidin-1-yl or morpholino group), or $-OCH_2O-$ which is bonded to two adjacent ring atoms in Cy;

X_i is a bond, O, NH or CH_2 ;

R_{3i} is phenyl, pyridyl or pyrimidinyl optionally substituted by R_{3a} ;

and

$-L-Lp(D)_n$ is of the formula:



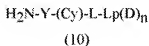
in which R_f is $-(CH_2)_c-R_c$, $-CH(R_e)R_f$, $-CH_2-CH(R_e)R_f$, $-CH_2-CH_2-CH(R_e)R_f$, or R_g in which c is 1 or 2; R_c is thienyl, thiazolyl (which may bear an amino substituent), isothiazolyl, oxazolyl, isoxazolyl, pyrazolyl, imidazolyl, pyridyl (which may bear an alkylsulphonyl, aminosulphonyl, alkylaminosulphonyl, alkylaminocarbonyl, amino, amido, (1-4C)alkoxycarbonyl, carboxy, acetyl amino, chloro, fluoro, cyano, (1-3C)alkyl, trifluoromethyl, methoxy, ethoxy, nitro, hydroxy, alkylsulphonylamino, triazolyl or tetrazolyl substituent), pyrimidinyl, pyridazinyl, pyrazinyl or phenyl (which may bear a methyl, methylamino, dimethylamino, carboxy, dialkylaminosulphonyl, alkylsulphonyl, aminosulphonyl, alkylaminosulphonyl,

alkylaminocarbonyl, amino, amido, alkoxycarbonyl, acetyl amino, chloro, fluoro, cyano, methoxy, ethoxy, nitro, hydroxy, alkylsulphonylamino, triazolyl or tetrazolyl substituent), each of R_d and R_f independently is hydrogen or C_{1-3} alkyl; or $CH(R_g)R_f$ is cyclopentyl (which may bear a hydroxy, amino, (1-3C)alkoxy, (1-3C)hydroxyalkyl, (1-3C)alkyl, carboxy, methoxycarbonyl or ethoxycarbonyl substituent at the 3- or 4-position), cyclohexyl (which may bear a hydroxy, amino, (1-3C)alkoxy, (1-3C)hydroxyalkyl, (1-3C)alkyl, carboxy, methoxycarbonyl or ethoxycarbonyl substituent at the 3- or 4-position), tetrahydropyran-4-yl, tetrahydrothiopyran-4-yl, pyrrolidin-3-yl (which may bear a hydroxy, amino, (1-3C)alkoxy, (1-3C)hydroxyalkyl, (1-3C)alkyl, carboxy, methoxycarbonyl or ethoxycarbonyl substituent at the 1-position), piperidin-4-yl (which may bear a hydroxy, amino, (1-3C)alkoxy, (1-3C)hydroxyalkyl, (1-3C)alkyl, carboxy, methoxycarbonyl or ethoxycarbonyl substituent at the 1-position), or indan-2-yl; and R_g is λ^6 -1,1-dioxobenzo[b]thiophen-7-yl;

or a physiologically-tolerable salt thereof,

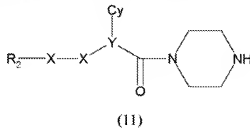
which process comprises

(a) reacting a compound of formula (10)

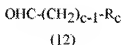


with a compound of formula R_2-COOH , under amide bond-forming conditions; or

b) when R_f is $-(CH_2)_c-R_c$, reacting a compound of formula (11)



with a compound of (12)



in the presence of a reducing agent;

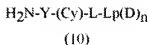
followed if a salt is required, by forming a physiologically acceptable salt.

37 (previously presented): A process as claimed in Claim 36, in which the compound of formula (I) is selected from:

1-(Indole-6-carbonyl-D-phenylglycyl)-4-[2-(4-pyridinyl)ethyl]piperazine;

1-(3-Chloroindole-6-carbonyl-D-phenylglycyl)-4-[2-(4-pyridinyl)ethyl]piperazine;
 1-(4-Methoxy benzoyl-D-phenylglycyl)-4-(1-methylpiperidin-4-yl)piperazine;
 1-(Indole-6-carbonyl-D-phenylglycyl)-4-(1-methylpiperidin-4-yl)piperazine;
 1-(4-Methoxy benzoyl-D-(2-chlorophenyl)glycyl)-4-(1-methylpiperidin-4-yl)piperazine;
 1-(Indole-6-carbonyl-D-(2-chlorophenyl)glycyl)-4-(1-methylpiperidin-4-yl)piperazine; and
 1-(4-Methoxy benzoyl-D-(2-trifluoromethylphenyl)glycyl)-4-(1-methylpiperidin-4-yl)-
 piperazine;
 and physiologically-tolerable salts thereof.

38 (currently amended): A compound of formula (10)



in which:

Y is CH₃;

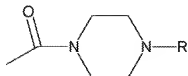
Cy is an optionally R_{3a} substituted: phenyl group, or a phenyl group substituted by R_{3j}X_i;

each R_{3a} independently is hydrogen, hydroxyl, alkoxy, aralkoxy, alkyl, alkylaminoalkyl, hydroxymethyl, carboxy, alkoxyalkyl, alkoxycarbonyl, alkylaminocarbonyl, aminomethyl, CONH₂, CH₂CONH₂, (1-6C)alkanoylamino, alkoxycarbonylamino, amino, halo, cyano, nitro, thiol, alkylthio, alkylsulphonyl, alkylsulphenyl, triazolyl, imidazolyl, tetrazolyl, hydrazido, alkylimidazolyl, thiazolyl, alkylthiazolyl, alkylloxazolyl, oxazolyl, alkylsulphonamido, alkylaminosulphonyl, aminosulphonyl, haloalkoxy, haloalkyl, a group of the formula -C(X³)N(R¹¹)R¹² (wherein X³ is O or S; and R¹¹ and R¹² are independently selected from hydrogen, methyl or ethyl or together with the nitrogen atom to which they are attached form a pyrrolidin-1-yl, piperidin-1-yl or morpholino group), or -OCH₂O- which is bonded to two adjacent ring atoms in Cy;

X_i is a bond, O, NH or CH₂;

R_{3j} is phenyl, pyridyl or pyrimidinyl optionally substituted by R_{3a}; and

-L-Lp(D)_n is of the formula:



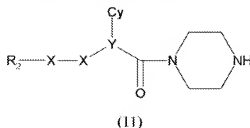
in which R_f is $-(CH_2)_c-R_c$, $-CHR_cR_f$, $-CH_2-CHR_cR_f$, $-CH_2-CH_2-CHR_cR_f$, or R_g in which c is 1 or 2; R_c is thienyl, thiazolyl (which may bear an amino substituent), isothiazolyl, oxazolyl, isoxazolyl, pyrazolyl, imidazolyl, pyridyl (which may bear an alkylsulphonyl, aminosulphonyl, alkylaminosulphonyl, alkylaminocarbonyl, amino, amido ($CONH_2$), (1-4C)alkoxycarbonyl, carboxy, acetylamino, chloro, fluoro, cyano, (1-3C)alkyl, trifluoromethyl, methoxy, ethoxy, nitro, hydroxy, alkylsulphonylamino, triazolyl or tetrazolyl substituent), pyrimidinyl, pyridazinyl, pyrazinyl or phenyl (which may bear a methyl, methylamino, dimethylamino, carboxy, dialkylaminosulphonyl, alkylsulphonyl, aminosulphonyl, alkylaminosulphonyl, alkylaminocarbonyl, amino, amido, alkoxycarbonyl, acetylamino, chloro, fluoro, cyano, methoxy, ethoxy, nitro, hydroxy, alkylsulphonylamino, triazolyl or tetrazolyl substituent); each of R_e and R_f independently is hydrogen or C_{1-3} alkyl; or CHR_cR_f is cyclopentyl (which may bear a hydroxy, amino, (1-3C)alkoxy, (1-3C)hydroxyalkyl, (1-3C)alkyl, carboxy, methoxycarbonyl or ethoxycarbonyl substituent at the 3- or 4-position), cyclohexyl (which may bear a hydroxy, amino, (1-3C)alkoxy, (1-3C)hydroxyalkyl, (1-3C)alkyl, carboxy, methoxycarbonyl or ethoxycarbonyl substituent at the 3- or 4-position), tetrahydropyran-4-yl, tetrahydrothiopyran-4-yl, pyrrolidin-3-yl (which may bear a hydroxy, amino, (1-3C)alkoxy, (1-3C)hydroxyalkyl, (1-3C)alkyl, carboxy, methoxycarbonyl or ethoxycarbonyl substituent at the 1-position), piperidin-4-yl (which may bear a hydroxy, amino, (1-3C)alkoxy, (1-3C)hydroxyalkyl, (1-3C)alkyl, carboxy, methoxycarbonyl or ethoxycarbonyl substituent at the 1-position), or indan-2-yl; and R_g is λ^6 -1,1-dioxobenzo[b]thiophen-7-yl;

or a physiologically-tolerable salt thereof;

provided that the compound of formula (10) is other than (R)-4-methyl-1-(2-phenylglycyl)piperazine.

39 (previously presented): A compound as claimed in Claim 38, in which Cy is unsubstituted phenyl.

40 (previously presented): A compound of formula (11)



in which:

R₂ is:-

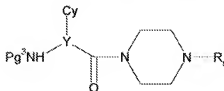
- (i) phenyl optionally being substituted in the 3 and/or 4 position by halo, nitro, thiol, haloalkoxy, hydrazido, alkylthio, amino, cyano, haloalkyl, alkylthio, alkenyl, alkynyl, acylamino, tri or difluoromethoxy, carboxy, acyloxy, MeSO₂- or R₁, and optionally substituted at the 6 position by amino, hydroxy, halo, alkyl, carboxy, alkoxy, carbonyl, cyano, amido (CONH₂), aminoalkyl, alkoxy or alkylthio;
- (ii) naphth-2-yl optionally substituted at the 6 or 7 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R₁; and optionally substituted at the 3 position by amino, hydroxy, halo, alkyl, carboxy, cyano, amido, aminoalkyl, alkoxy or alkylthio;
- (iii) isoquinolin-7-yl, indol-5-yl, indol-6-yl, indazol-5-yl, indazol-6-yl, benzothiazol-6-yl or benzisoxazol-5-yl optionally substituted at the 3 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R₁;
- (iv) benzimidazol-5-yl or benzothiazol-6-yl optionally substituted at the 2 position by amino;
- (v) thien-2-yl or thien-3-yl optionally substituted at the 4 or 5 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R₁;
- (vi) 3,4-methylenedioxyphenyl, 2,3-dihydroindol-6-yl, 3,3-dichloro-2-oxo-indol-6-yl or 1-methyl-3-aminindazol-5-yl;
- (vii) benzothiazol-2-yl, imidazo[1,2-a]pyrimidin-2-yl or tetrahydroimidazo[1,2-a]pyrimidin-2-yl;
- (viii) pyrazol-2-yl optionally substituted at the 5 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R₁;
- (ix) pyrid-2-yl optionally substituted at the 5 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R₁;
- (x) pyrid-3-yl optionally substituted at the 6 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R₁;
- (xi) benzofur-2-yl optionally substituted at the 3 position by amino, hydroxy, halo, alkyl, carboxy, cyano, amido, aminoalkyl, alkoxy or alkylthio and at the 5 or 6 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R₁;
- (xii) indol-2-yl optionally substituted on the indole nitrogen atom by alkyl and optionally substituted at the 5 or 6 position by halo, haloalkoxy, haloalkyl, cyano, nitro, amino, hydrazido, alkylthio, alkenyl, alkynyl or R₁;

form a pyrrolidin-1-yl, piperidin-1-yl or morpholino group), or -OCH₂O- which is bonded to two adjacent ring atoms in Cy;

X_i is a bond, O, NH or CH₂; and

R_{3j} is phenyl, pyridyl or pyrimidinyl optionally substituted by R_{3a}.

41 (currently amended): A compound of the formula (16):



in which:

Y (the α-atom) is a CH group;

Cy is an optionally R_{3a} substituted: phenyl group, or a phenyl group substituted by R_{3i}X_i;

each R_{3a} independently is hydrogen, hydroxyl, alkoxy, aralkyloxy, alkyl, alkylaminoalkyl, hydroxymethyl, carboxy, alkoxyalkyl, alkoxycarbonyl, alkylaminocarbonyl, aminomethyl, CONH₂, CH₂CONH₂, (1-6C)alkanoylamino, alkoxycarbonylamino, amino, halo, cyano, nitro, thiol, alkylthio, alkylsulphonyl, alkylsulphenyl, triazolyl, imidazolyl, tetrazolyl, hydrazido, alkylimidazolyl, thiazolyl, alkylthiazolyl, alkylloxazolyl, oxazolyl, alkylsulphonamido, alkylaminosulphonyl, aminosulphonyl, haloalkoxy, haloalkyl, a group of the formula -C(X³)N(R¹¹)R¹² (wherein X³ is O or S; and R¹¹ and R¹² are independently selected from hydrogen, methyl or ethyl or together with the nitrogen atom to which they are attached form a pyrrolidin-1-yl, piperidin-1-yl or morpholino group), or -OCH₂O- which is bonded to two adjacent ring atoms in Cy;

X_i is a bond, O, NH or CH₂;

R_{3j} is phenyl, pyridyl or pyrimidinyl optionally substituted by R_{3a};

R_f is -(CH₂)_c-R_c, -CH(R_c)R_f, -CH₂-CH(R_c)R_f, -CH₂-CH₂-CH(R_c)R_f, or R_g in which c is 1 or 2, R_c is thienyl, thiazolyl (which may bear an amino substituent), isothiazolyl, oxazolyl, isoxazolyl, pyrazolyl, imidazolyl, pyridyl (which may bear an alkylsulphonyl, aminosulphonyl, alkylaminosulphonyl, alkylaminocarbonyl, amino, amido, (1-4C)alkoxycarbonyl, carboxy, acetylamino, chloro, fluoro, cyano, (1-3C)alkyl, trifluoromethyl, methoxy, ethoxy, nitro, hydroxy, alkylsulphonylamino, triazolyl or tetrazolyl substituent), pyrimidinyl, pyridazinyl, pyrazinyl or phenyl (which may bear a methyl, methylamino, dimethylamino, carboxy,

dialkylaminosulphonyl, alkylsulphonyl, aminosulphonyl, alkylaminosulphonyl, alkylaminocarbonyl, amino, amido (CONH_2), alkoxycarbonyl, acetyl amino, chloro, fluoro, cyano, methoxy, ethoxy, nitro, hydroxy, alkylsulphonylamino, triazolyl or tetrazolyl substituent); each of R_e and R_f independently is hydrogen or C_{1-3} alkyl; or CHR_eR_f is cyclopentyl (which may bear a hydroxy, amino, (1-3C)alkoxy, (1-3C)hydroxyalkyl, (1-3C)alkyl, carboxy, methoxycarbonyl or ethoxycarbonyl substituent at the 3- or 4-position), cyclohexyl (which may bear a hydroxy, amino, (1-3C)alkoxy, (1-3C)hydroxyalkyl, (1-3C)alkyl, carboxy, methoxycarbonyl or ethoxycarbonyl substituent at the 3- or 4-position), tetrahydropyran-4-yl, tetrahydrothiopyran-4-yl, pyrrolidin-3-yl (which may bear a hydroxy, amino, (1-3C)alkoxy, (1-3C)hydroxyalkyl, (1-3C)alkyl, carboxy, methoxycarbonyl or ethoxycarbonyl substituent at the 1-position), piperidin-4-yl (which may bear a hydroxy, amino, (1-3C)alkoxy, (1-3C)hydroxyalkyl, (1-3C)alkyl, carboxy, methoxycarbonyl or ethoxycarbonyl substituent at the 1-position), or indan-2-yl; and R_g is λ^6 -1,1-dioxobenzo[b]thiophen-7-yl; and

Pg^3 represents a group of formula RCO in which R represents C_{1-6} alkyl, C_{3-10} cycloalkyl, phenyl C_{1-6} alkyl, phenyl, C_{1-6} alkoxy, phenyl C_{1-6} alkoxy, or a C_{3-10} cycloalkoxy, wherein a phenyl group may be optionally substituted, by one or two of halogen, C_1 - C_4 alkyl and C_1 - C_4 alkoxy;

or a physiologically-tolerable salt thereof;

provided that the compound of formula (16) is other than
(R)-1-[N-(benzyloxy carbonyl)-2-phenylglycyl]-4-methylpiperazine.

42 (canceled)

43 (previously presented): A compound as claimed in Claim 41, in which Pg^3 represents t-butoxycarbonyl.

44 (canceled)

45 (canceled)

46 (canceled):